

**Amendment to the Claims**

In this Amendment After Final, please cancel claims 1, 3-6, 15, and 18-20 without prejudice. Please add new claims 21-33. This listing of claims will replace all prior versions, and listings, of claims in the application:

1 -20. (Cancelled)

21. (New) A microfluidic device comprising: an array of chambers, each chamber connected with at least four connection channels, each connection channel connecting at least one chamber to another chamber, and each connection channel having a valve to provide fluid control.

22. (New) The microfluidic device of claim 21, wherein each chamber is associated with an inlet or an outlet.

23. (New) The microfluidic device of claim 22, wherein each chamber includes a pump.

24. (New) The microfluidic device of claim 23, further comprising a top plate and a substrate which define at least each chamber and connection channel.

25. (New) The microfluidic device of claim 24, wherein the top plate and substrate are laminated together.

26. (New) The microfluidic device of claim 21, wherein the array of chambers includes at least one of a  $N \times N$  array of chambers or  $N \times M$  array of chambers, and wherein  $N$  and  $M$  is an integer greater than 1.

27. (New) In a microfluidic device comprising having an array of chambers, each chamber connected with at least four connection channels, each connection channel connecting at least one chamber to another chamber, and each connection channel having a valve to provide fluid control, a method comprising:

providing fluid into a first chamber in the array of chambers; and

pumping the fluid into at least four connection channels such that the fluid is received at second, third, fourth, and fifth chambers.

28. The method of claim 27, further comprising controlling the flow of the fluid in each connection channel by its valve.

29. The method of claim 27, wherein providing the fluid into the first chamber includes receiving the fluid via an inlet.

30. The method of claim 27, further comprising outputting the fluid in any one of the second, third, fourth, and fifth chambers via an outlet.

31. A microfluidic device comprising: a top plate and substrate laminated together, the top plate and substrate defining an array of chambers, and at least four connection channels, each connection channel connecting at least one chamber to another chamber.

32. The microfluidic device of claim 31, further comprising a valve for each connection channel which provides fluid control.

33. (New) The microfluidic device of claim 21, wherein the array of chambers includes at least one of a  $N \times N$  array of chambers or  $N \times M$  array of chambers, and where  $N$  and  $M$  is an integer greater than 1.